

WHAT IS CLAIMED IS:

1. A resonant circuit comprising:  
a substrate having a planar surface;  
at least one resonator formed from a high temperature superconducting material  
5 formed on the substrate, the resonator having one or more turns, when combined, turn  
through greater than  $540^\circ$ , the resonator turns including at least one left hand turn and one  
right hand turn.
2. The resonant circuit of claim 1, wherein the at least one high temperature  
10 superconducting resonator is formed using a thallium-based superconductor.
3. The resonant circuit of claim 1, wherein the at least one high temperature  
superconducting resonator is formed using a yttrium-based material.
- 15 4. The resonant circuit of claim 1, wherein the at least one high temperature  
superconducting resonator is formed using a bismuth-based material.
5. The tunable resonant circuit of claim 1, wherein the at least one high  
temperature superconducting resonator is formed with an epitaxial thin film  
20 superconductor.
6. The resonant circuit of claim 1, wherein the substrate comprises a  
dielectric material.



7. The resonant circuit of claim 6, wherein the substrate is a wafer having a diameter of two inches or less.

5 8. The resonant circuit of claim 1 further including a tuning structure.